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GAURAV BANGA

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EXAMINER

CHU, GABRIEL L

ART UNIT

PAPER NUMBER

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21

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/456,027

Applicant(s)

BANGA, GAURAV

Examiner

Gabriel L. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 13-22, 27-36 and 41-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 13-22, 27-36 and 41-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 13-15, 27-29, and 41-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Referring to claims 13, 27, and 41, the determination of the "most likely" configuration change responsible is not sufficiently disclosed in the specification. From page 21, the specification alludes to "diagnostic constraints", but does not detail how this procedure determines likelihood. Further, from page 8, the appendix alludes that "software logic to [examine and analyze the various events between the last instance of time which was known to be problem free to the current event], like the logic for continuous monitoring, is system specific and may need to be evolved over time." For the purpose of examination, these claims are read as "... a configuration change responsible for said error..."

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 16-22, and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5553235 to Chen et al. Referring to claims 1, 16, and 30, Chen et al. disclose repeatedly reviewing monitoring statistics regarding operation of a data processing system, said steps of reviewing being performed at least as often as a selected time period (From line 46 of column 82, "Once constructed, the purpose of a performance pathology library is to provide wide and easy access to the body of knowledge of computer and network performance problems and solutions. This knowledge can then become the basis for advancing the state of the art in developing intelligent machines that can know when they are in a "poor performance" mode, take corrective action, and monitor the corresponding results in a closed feedback loop." Further, from line 62 of column 84, "The filtering process may need to sample the data over time to match a data trend in addition to individual sampled values."); processing said monitoring statistics using a diagnostic software module, in response to said steps of repeatedly reviewing (From line 46 of column 82, "Once constructed, the purpose of a performance pathology library is to provide wide and easy access to the body of knowledge of computer and network performance problems and solutions. This knowledge can then become the basis for advancing the state of the art in developing intelligent machines that can know when they are in a "poor performance" mode, take corrective action, and monitor the corresponding results in a closed feedback loop." Further, from line 51 of column 84, "As "cures" are found for these performance "diseases", they are also stored in the database, and linked to the corresponding

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disease(s). A recording of the new "healthy" response is also stored so a user can see what the system should look like after application of the "cure" As observations become more precise, automatic data filters can be used to automatically correlate and cross correlate data patterns to help automate the data analysis process. The data filter takes specific system performance data at each sample point and runs it through a correlation procedure to see if the data values can be correlated to some known pathological pattern. The filtering process may need to sample the data over time to match a data trend in addition to individual sampled values. The filtering process includes combinations of arithmetic and boolean operators on the data variables. The data filter may generate a value that sets off an alarm or some other user specified process. For example, a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space."); wherein said diagnostic software diagnoses a behavior of said data processing system to determine a specific problem or problems by comparing said monitoring statistics to rules or patterns representing abnormal states of operation for said data processing system (From line 51 of column 84, "As "cures" are found for these performance "diseases", they are also stored in the database, and linked to the corresponding disease(s). A recording of the new "healthy" response is also stored so a user can see what the system should look like after application of the "cure" As observations become more precise, automatic data filters can be used to automatically correlate and cross correlate data patterns to help automate the data analysis process. The data filter takes specific system performance data at each sample point and runs it through a correlation

procedure to see if the data values can be correlated to some known pathological pattern. The filtering process may need to sample the data over time to match a data trend in addition to individual sampled values. The filtering process includes combinations of arithmetic and boolean operators on the data variables. The data filter may generate a value that sets off an alarm or some other user specified process. For example, a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space.”). Although Chen et al. do not specifically disclose said data processing system can be a file server, using a data processing system to serve files is notoriously well known in the art. Examiner takes official notice for using a computer to upload files. A person of ordinary skill in the art at the time of the invention would have been motivated to use a computer to upload files because there is a need to distribute data in a network. Wherein said computer operable to upload files would have at least an interface to a network, mass storage accessible through said interface, and a processor that controls access to said mass storage.

Referring to claims 2, 17, and 31, Chen et al. disclose said diagnostic software module includes a pattern matching system and a rule-based inference system (From line 28 of column 83, “The first phase of creating the library is to gather performance recordings, analysis, and “treatment” data at 502. Using the prerequisite recording/playback tools, performance “scientists” would go about to various configurations of their systems and make recordings of raw performance data e.g., CPU, Memory, Disk, Network, etc. utilization. Recordings are made of pathological

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cases that were artificially constructed "in vitro" experiments or live "in vivo" field observations of performance problems. During this first phase 502, almost all the recordings will be new observations. As the recording data base (DB) grows, additional observations that can be grouped with known pathologies should be saved in a compressed format so that statistical profiles can be generated from the captured data at 506. Unique new observations are processed in the second phase 504. The second phase of library creation is the systematic description, annotation, analysis, categorizing, naming, and manipulating of the recording data before entering them into the library at 508. Two major categories are the "wellness" DB and the "diseases" DB. This second phase sorts the recordings into these two major categories at 510 by detecting and associating pathological effects to each recording. For example, a recording may show a "runaway" process running at 100% CPU utilization when it should be idling. Or a "thrashing" recording may show excessive disk paging for a process that has large resident set memory requirements in a memory constrained system. The key characteristic factors in these scenarios would be described, annotated on the recording, named, categorized, and possibly filtered compressed, scaled, correlated to other known phenomenon before placed in the "wellness" 512 or "disease" 514 DB." Further, from line 5 of column 84, "After a pathology library has been established, it needs an efficient access mechanism to be useful for library users. Raw performance recordings by themselves have limited usage and only for specialized group of people. The main search mechanism is a conventional computer based query data base commonly known in the art, such as the Oracle Relational Data Base

Management System (RDBMS), described in "Oracle for IBM RISC System/6000 Installation and User s Guide", ver 6.0, part number 5687-v6.0.31, dated 1991 and hereby incorporated by reference as background material. The database has all the key information on each recording. Recordings themselves may still have the markings and annotations of the original observer, but the salient characteristics of the recordings need to be part of the search data base." Further, from line 51 of column 84, "As "cures" are found for these performance "diseases", they are also stored in the database, and linked to the corresponding disease(s). A recording of the new "healthy" response is also stored so a user can see what the system should look like after application of the "cure" As observations become more precise, automatic data filters can be used to automatically correlate and cross correlate data patterns to help automate the data analysis process. The data filter takes specific system performance data at each sample point and runs it through a correlation procedure to see if the data values can be correlated to some known pathological pattern. The filtering process may need to sample the data over time to match a data trend in addition to individual sampled values. The filtering process includes combinations of arithmetic and boolean operators on the data variables. The data filter may generate a value that sets off an alarm or some other user specified process. For example, a data filter may set an alarm when paging space on the host machine is less than 10 percent free or there is less than 100 pages of free paging space.").

Referring to claims 3, 18, and 32, Chen et al. disclose said monitoring statistics include information gathered by at least a first and at least a second software module,



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said first and second software modules being disposed at differing levels of said file server (From line 28 of column 83, "The first phase of creating the library is to gather performance recordings, analysis, and "treatment" data at 502. Using the prerequisite recording/playback tools, performance "scientists" would go about to various configurations of their systems and make recordings of raw performance data e.g., CPU, Memory, Disk, Network, etc. utilization. Recordings are made of pathological cases that were artificially constructed "in vitro" experiments or live "in vivo" field observations of performance problems. During this first phase 502, almost all the recordings will be new observations. As the recording data base (DB) grows, additional observations that can be grouped with known pathologies should be saved in a compressed format so that statistical profiles can be generated from the captured data at 506. Unique new observations are processed in the second phase 504."). Although Chen et al. do not specifically disclose gathering within an operating system, gathering performance data in an operating system is notoriously well known in the art. Examiner takes official notice for gathering data in an operating system. A person of ordinary skill in the art at the time of the invention would have been motivated to gather data in an operating system because operating systems provide a platform for performing operations in a computer and interfacing between software and hardware components.

Referring to claims 4, 19, and 33, Chen et al. disclose said monitoring statistics include information gathered by at least one software module of said file server (From line 28 of column 83, "The first phase of creating the library is to gather performance recordings, analysis, and "treatment" data at 502. Using the prerequisite

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recording/playback tools, performance "scientists" would go about to various configurations of their systems and make recordings of raw performance data e.g., CPU, Memory, Disk, Network, etc. utilization. Recordings are made of pathological cases that were artificially constructed "in vitro" experiments or live "in vivo" field observations of performance problems. During this first phase 502, almost all the recordings will be new observations. As the recording data base (DB) grows, additional observations that can be grouped with known pathologies should be saved in a compressed format so that statistical profiles can be generated from the captured data at 506. Unique new observations are processed in the second phase 504."). Although Chen et al. do not specifically disclose gathering within an operating system, gathering performance data in an operating system is notoriously well known in the art. Examiner takes official notice for gathering data in an operating system. A person of ordinary skill in the art at the time of the invention would have been motivated to gather data in an operating system because operating systems provide a platform for performing operations in a computer and interfacing between software and hardware components.

Referring to claims 5, 20, and 34, Chen et al. disclose a period for repeatedly monitoring (From line 46 of column 82, "Once constructed, the purpose of a performance pathology library is to provide wide and easy access to the body of knowledge of computer and network performance problems and solutions. This knowledge can then become the basis for advancing the state of the art in developing intelligent machines that can know when they are in a "poor performance" mode, take corrective action, and monitor the corresponding results in a closed feedback loop."

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Further, from line 62 of column 84, "The filtering process may need to sample the data over time to match a data trend in addition to individual sampled values."). Although Chen et al. do not specifically disclose said selected time period is less than 10 seconds, collecting data at a period of less than 10 seconds is a matter of design dependent on system components (such as processor speed), network connectivity, and system load.

Referring to claims 6, 21, and 35, Chen et al. disclose said steps of processing are responsive to a usage profile for said file server (From line 38 of column 83, "As the recording data base (DB) grows, additional observations that can be grouped with known pathologies should be saved in a compressed format so that statistical profiles can be generated from the captured data at 506.").

Referring to claims 7, 22, and 36, although Chen et al. do not specifically disclose said usage profile includes information regarding whether use of said data processing system includes usage as an ISP, a development environment, or a mail server, such uses for a data processing system are notoriously well known in the art. Examiner takes official notice for using a file server as a mail server (wherein a file is understood to be a basic unit of storage). A person of ordinary skill in the art at the time of the invention would have been motivated to monitor a file server used as a mail server, and thus create a usage profile in the form of historical data, because, from the abstract, there is a need to determine "whether a problem or a potential problem exists based on the analysis of the network environment".

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5. Claims 13-15, 27-29, and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6173417 to Merrill. Referring to claims 13, 27, and 41, Merrill discloses tracking configuration changes to a computer system (From the abstract, "The base configuration may be automatically modified in response to system hardware or software configuration changes. " Further, Merrill discloses using the computer system, wherein using a computer results in changing data stored in memory, resulting in a change in the configuration of the memory.); identifying changes in monitoring statistics for said computer system that indicate an error or other failure in said computer system (From line 30 of column 7, "The system management mode monitors for a number of different crash circumstances and routinely detects a variety of different failures. Other detectors of system failure can be used as well including those variously described as heart beat monitors, watch dog timers, and crash detectors. In each case the systems detect some symptom of failure such as a hang, a lack of bus operations or some other system associated with a crash."); relating said changes in said monitoring statistics to timing of said configuration changes (From line 35 of column 2, "Upon detection of a program failure, the image is loaded into system memory."); determining, in response to said steps of tracking and of relating, a configuration change responsible for said error or other failure in said computer system (From line 35 of column 2, "Upon detection of a program failure, the image is loaded into system memory."); and suggesting, in response to a result of said step of determining, an activity to reverse one or more of said configuration changes (From line 39 of column 7, "If a crash is detected at diamond 74, either by the system management mode or some other way, a check is made at

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diamond 76 to determine whether or not it would be possible to overcome the problem merely by closing the application. If so, the application is merely closed at block 72.

The system management mode or other crash detector may have a cache which provides information about different failures which may occur. The cache, which may be stored on the hard disk drive 10, provides information about the best way to deal with those failures. If the failure is one in which the problem can be overcome merely by closing the application, it would normally be desirable to undertake that approach. If the recorded cache information suggests it is not possible merely to close the application, a check is made at diamond 78 to determine whether or not the executive should be run. Again, the cache is checked to determine whether or not the use of the virtual image will overcome the problem. If not, the flow moves to a reset 80 and the system is reset (block 81) in the conventional fashion unless the system is operational (block 83). If the cache information indicates that the virtual image could be used to overcome the problem, the VxD is initiated, as indicated at block 82. Thereafter, the virtual image is called at block 84 and the executive takes over control at 86. The executive brings the system up using the predefined virtual image, as originally loaded into the system, or as modified as described previously, to accommodate changed system configurations.”).

Although Merrill does not specifically disclose said computer system can be a file server, using a computer system to serve files is notoriously well known in the art.

Examiner takes official notice for using a computer to upload files. A person of ordinary skill in the art at the time of the invention would have been motivated to use a computer to upload files because there is a need to distribute data in a network. Wherein said

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computer operable to upload files would have at least an interface to a network, mass storage accessible through said interface, and a processor that controls access to said mass storage.

Referring to claims 14, 28, and 42, Merrill discloses including steps of suggesting activities to reverse said configuration changes so as to place said file server in an operating state (From line 39 of column 7, "If a crash is detected at diamond 74, either by the system management mode or some other way, a check is made at diamond 76 to determine whether or not it would be possible to overcome the problem merely by closing the application. If so, the application is merely closed at block 72. The system management mode or other crash detector may have a cache which provides information about different failures which may occur. The cache, which may be stored on the hard disk drive 10, provides information about the best way to deal with those failures. If the failure is one in which the problem can be overcome merely by closing the application, it would normally be desirable to undertake that approach. If the recorded cache information suggests it is not possible merely to close the application, a check is made at diamond 78 to determine whether or not the executive should be run. Again, the cache is checked to determine whether or not the use of the virtual image will overcome the problem. If not, the flow moves to a reset 80 and the system is reset (block 81) in the conventional fashion unless the system is operational (block 83). If the cache information indicates that the virtual image could be used to overcome the problem, the VxD is initiated, as indicated at block 82. Thereafter, the virtual image is called at block 84 and the executive takes over control at 86. The executive brings the

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system up using the predefined virtual image, as originally loaded into the system, or as modified as described previously, to accommodate changed system configurations.”).

Referring to claims 15, 29, and 43, Merrill discloses said configuration changes include hardware and software configuration changes (From line 9 of column 3, “The base operating system image 18 may, for example, include initial register settings, device settings, base memory page files and the like. In short, it includes everything that is loaded into memory at run time including dedicated applications and a user shell.”).

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-7, 13-22, 27-36, and 41-43 have been considered but are moot in view of the new ground(s) of rejection. However, Examiner chooses to address several issues with regard to claims 13-15, 27-29, and 41-43. Specifically, claims 13-15, 27-29, and 41-43 do not specifically claim how or what configuration changes are tracked or what constitutes a configuration change; do not specifically claim what statistics are monitored or what constitutes a statistic, which is, broadly, numerical data; do not specifically claim how the changes in statistics and timing of configuration changes are related; do not specifically claim any relationship between “configuration change” and “said configuration changes”; and do not specifically claim how to “reverse” one or more configuration changes.

### ***Conclusion***

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7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6173420 to Sunkara et al.

US 6185577 to Nainani et al.


US 6240511 to Blumenau et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gabriel L. Chu whose telephone number is (703) 308-7298. The examiner can normally be reached on weekdays with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel, Jr. can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

gc

  
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